

## **USE OF THE REY-OSTERRIETH COMPLEX FIGURE TO IDENTIFY COCAINE-ADDICTED INDIVIDUALS WITH FRONTAL LOBE DYSFUNCTION**

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### **ABSTRACT**

The Rey-Osterrieth Complex Figure (ROCF) is a widely used neuropsychological tool for the assessment of visuospatial processing, memory, and executive function in clinical populations. In the present study, qualitative classifications of the ROCF copy were used to divide into two groups, 18 right-handed cocaine-addicted subjects, who completed a larger neuropsychological battery and participated in a positron emission tomography (PET) with 2-deoxy-2-[<sup>18</sup>F]fluoro-D-glucose (<sup>18</sup>FDG) study. Subjects in Group 1 had a “configurational” approach and integrated elements in an organized fashion, while subjects in Group 2 had a “piecemeal” approach and produced a degraded Gestalt. Group 2 also scored significantly lower than group 1 on the ROCF Boston Qualitative Scoring System Organization component. Results revealed that while there were no significant differences between the groups on variables such as age, education, and IQ, Group 2 performed significantly worse on the Trails Making Test part B. Also, Group 2’s ROCF copy was associated with other measures of executive function, organization and planning (Mazes, perseverative errors on the Wisconsin Card Test;  $r$ 's = 0.62, -0.72,  $p$ 's < 0.05). Moreover, significant negative correlations between ROCF copy accuracy and relative resting PET FDG glucose metabolism in the frontal lobe and orbitorectal gyrus were documented in Group 2 only ( $r$ 's = -0.67, -0.73,  $p$ 's < 0.05). In conclusion, copy of the ROCF can be used to identify cocaine-addicted subjects with compromised executive function and frontal lobe involvement. The association of this non-invasive neuropsychological tool with neural function in the “reward circuit” implicates impaired planning in addiction.

**Descriptors:** Higher cognition: Executive functions